

## Claims

1. A method for characterising features of paper based on computer vision,  
**characterised** in that from pictures of numerous paper samples are  
5 extracted multi-dimensional features describing features of paper; the said  
features are entered as input into a learning classifier operating in an  
unsupervised manner, which produces a projection of the said data of each  
picture part in a low-dimension space, so that paper grades having close  
properties produce close projections in the low-dimension space and the  
10 classification results projected in the low-dimension space are used to aid  
classification.
2. A method for characterising paper as claimed in claim 1, **characterised**  
in that the said learning system operating in an unsupervised manner is an  
15 unsupervised clustering method or its simulation, for example, a SOM (Self-  
Organising Map).
3. A method for characterising paper as claimed in claim 1 or 2,  
**characterised** in that the feature describing the paper samples is a LBP or a  
20 bit pattern feature derived from it.
4. A method for characterising features of paper as claimed in any of the  
above claims, **characterised** in that according to the method, paper is in  
addition imaged and classified at different stages of its manufacture.  
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5. A method for characterising features of paper as claimed in claim 4,  
**characterised** in that the samples imaged at different stages of the  
manufacture are processed further by means of the unsupervised learning  
classifier in such a way that the classification will also concern the  
30 progressing of the manufacturing process.

6. A system as claimed in claim 5, **characterised** in that in addition to the image information, selected process parameters and/or measurement results are used as input.
- 5 7. A system for classifying paper using computer vision, **characterised** in that the system comprises imaging means, means for extracting the features describing paper quality from an image of the paper, and means for unsupervised learning classification into a space with a low-dimension space compared with the feature space.